Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

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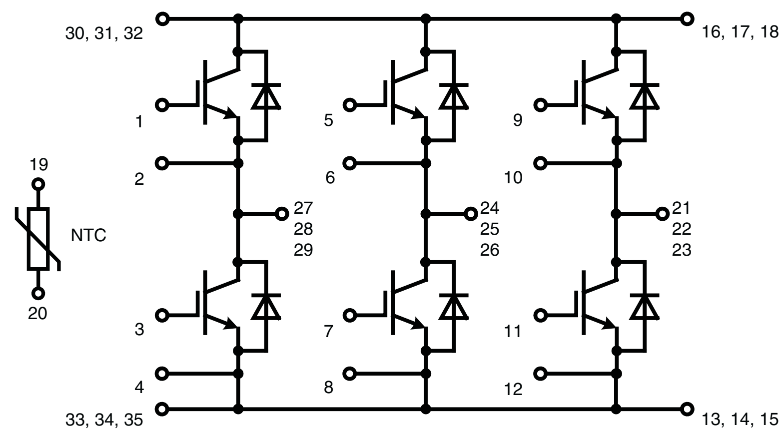
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

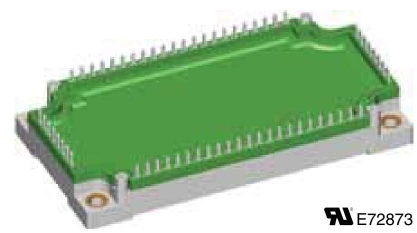
Six-Pack
Trench IGBT

V_{CES} = 1200 V
I_{C25} = 145 A
$V_{CE(sat)}$ = 1.7 V

Part name (Marking on product)

MWI100-12T8T





E72873

Pin configuration see outlines.

Features:
- Trench IGBT technology
- low saturation voltage
- low switching losses
- square RBSOA, no latch up
- high short circuit capability
- positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- ultra fast free wheeling diodes
- solderable pins for PCB mounting
- package with copper base plate

Application:
- AC motor drives
- Solar inverter
- Medical equipment
- Uninterruptible power supply
- Air-conditioning systems
- Welding equipment
- Switched-mode and resonant-mode power supplies

Package:
- "E3-Pack" standard outline
- Insulated copper base plate
- Soldering pins for PCB mounting
- Temperature sense included

IXYS reserves the right to change limits, test conditions and dimensions.

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Ouput Inverter T1 - T6

Symbol	Definitions	Conditions		min.	typ.	max.	Unit
V_{CES}	*collector emitter voltage*		T_{VJ} = 25°C			1200	V
V_{GES} V_{GEM}	*max. DC gate voltage* *max. transient collector gate voltage*	continuous transient				±20 ±30	V V
I_{C25} I_{C80}	*collector current*		T_C = 25°C T_C = 80°C			145 100	A A
P_{tot}	*total power dissipation*		T_C = 25°C			480	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 100 A; V_{GE} = 15 V	T_{VJ} = 25°C T_{VJ} = 125°C		1.7 2.0	2.1	V V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 4 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	5.0	5.8	6.5	V
I_{CES}	*collector emitter leakage current*	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C T_{VJ} = 125°C		 1	4	mA mA
I_{GES}	*gate emitter leakage current*	V_{GE} = ±20 V				500	nA
C_{ies}	*input capacitance*	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz			7210		pF
$Q_{G(on)}$	*total gate charge*	V_{CE} = 600 V; V_{GE} = 15 V; I_C = 100 A			550		nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	*turn-on delay time* *current rise time* *turn-off delay time* *current fall time* *turn-on energy per pulse* *turn-off energy per pulse*	inductive load V_{CE} = 600 V; I_C = 100 A V_{GE} = ±15 V; R_G = 3.9 Ω	T_{VJ} = 125°C		270 50 400 340 8.5 13.5		ns ns ns ns mJ mJ
RBSOA	*reverse bias safe operating area*	V_{GE} = ±15 V; R_G = 3.9 Ω;	T_{VJ} = 125°C V_{CEK} = 1200 V			200	A
SCSOA t_{SC} I_{SC}	*short circuit safe operating area* *short circuit duration* *short circuit current*	V_{CE} = 900 V; V_{GE} = ±15 V; R_G = 3.9 Ω; non-repetitive	T_{VJ} = 125°C		 400	 10	 µs A
R_{thJC}	*thermal resistance junction to case*	(per IGBT)				0.26	K/W

Output Inverter D1 - D6

Symbol	Definitions	Conditions		min.	typ.	max.	Unit
V_{RRM}	*max. repetitve reverse voltage*		T_{VJ} = 25°C			1200	V
I_{F25} I_{F80}	*forward current*		T_C = 25°C T_C = 80°C			135 90	A A
V_F	*forward voltage*	I_F = 100 A; V_{GE} = 0 V	T_{VJ} = 25°C T_{VJ} = 125°C		1.95 1.95	2.2	V V
Q_{rr} I_{RM} t_{rr} E_{rec}	*reverse recovery charge* *max. reverse recovery current* *reverse recovery time* *reverse recovery energy*	V_R = 600 V di_F/dt = -1600 A/µs I_F = 100 A; V_{GE} = 0 V	T_{VJ} = 125°C		12.5 100 350 4		µC A ns mJ
R_{thJC}	*thermal resistance junction to case*	(per diode)				0.4	K/W

T_C = 25°C unless otherwise stated

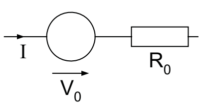
Temperature Sensor NTC

Symbol	Definitions	Conditions	min.	typ.	max.	Unit
				Ratings		
R_{25}	*resistance*	T_C = 25°C	4.75	5.0	5.25	kΩ
$B_{25/50}$				3375		K

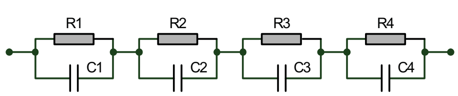
Module

Symbol	Definitions	Conditions	min.	typ.	max.	Unit
				Ratings		
T_{VJ}	*operating temperature*		-40		125	°C
T_{VJM}	*max. virtual junction temperature*				150	°C
T_{stg}	*storage temperature*		-40		125	°C
V_{ISOL}	*isolation voltage*	$I_{ISOL} \leq 1$ mA; 50/60 Hz			2500	V~
CTI	*comparative tracking index*				200	
M_d	*mounting torque (M5)*		2.7		3.3	Nm
d_S	*creep distance on surface*		10			mm
d_A	*strike distance through air*		7.5			mm
$R_{pin-chip}$	*resistance pin to chip*			2.5		mΩ
R_{thCH}	*thermal resistance case to heatsink*	with heatsink compound		0.02		K/W
Weight				300		g

0.0 Equivalent Circuits for Simulation



Symbol	Definitions	Conditions	min.	typ.	max.	Unit
				Ratings		
V_0	*IGBT*	T1 - T6, T_{VJ} = 125°C		1.0		V
R_0				9.1		mΩ
V_0	*Diode*	D1 - D6, T_{VJ} = 150°C		1.09		V
R_0				9.1		mΩ



$$Z_{th}(t) = \sum_{i=1}^{n} \left[R_i \cdot \left(1 - \exp\left(-\frac{t}{\tau_i} \right) \right) \right]$$

$$\tau_i = R_i \cdot C_i$$

	IGBT	Diode
R_1	0.03985	0.084
R_2	0.05038	0.069
R_3	0.08959	0.146
R_4	0.08018	0.101
τ_1	0.0025	0.0025
τ_2	0.076	0.076
τ_3	0.036	0.036
τ_4	0.076	0.076

T_C = 25°C unless otherwise stated

IXYS reserves the right to change limits, test conditions and dimensions.

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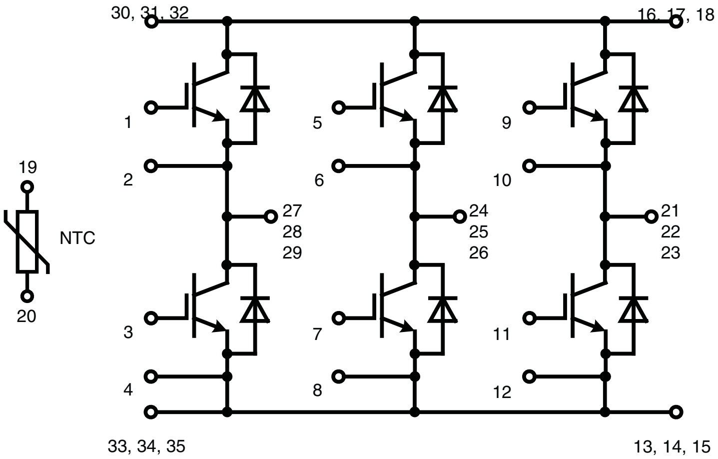
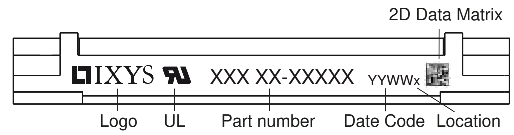
Circuit Diagram

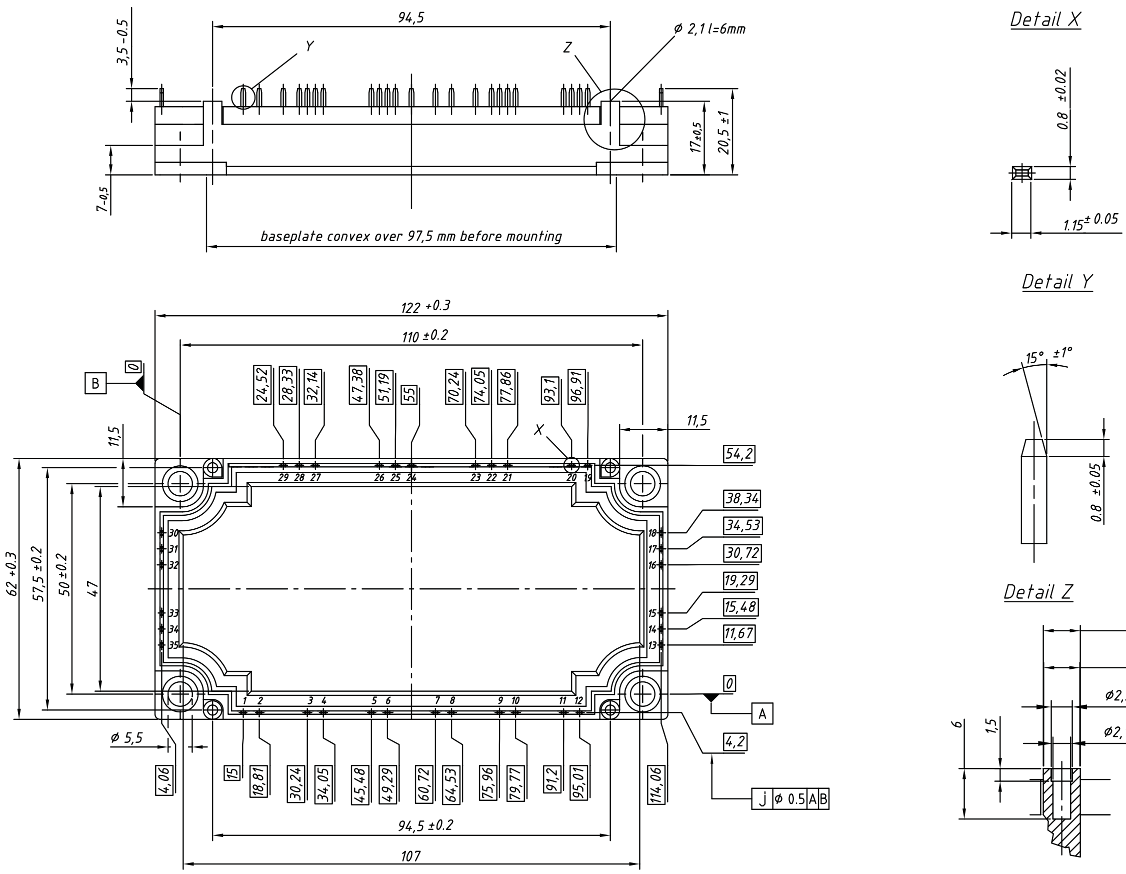


Marking on Product



Outline Drawing

Dimensions in mm (1 mm = 0.0394")



Product Marking

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MWI100-12T8T	MWI100-12T8T	Box	5	502294

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Inverter T1 - T6

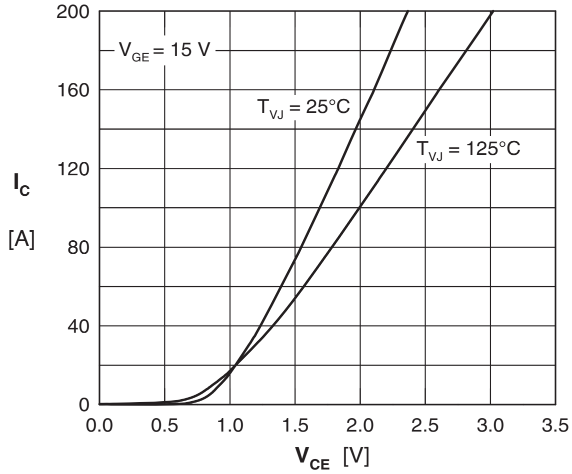

Fig. 1 Typ. output characteristics

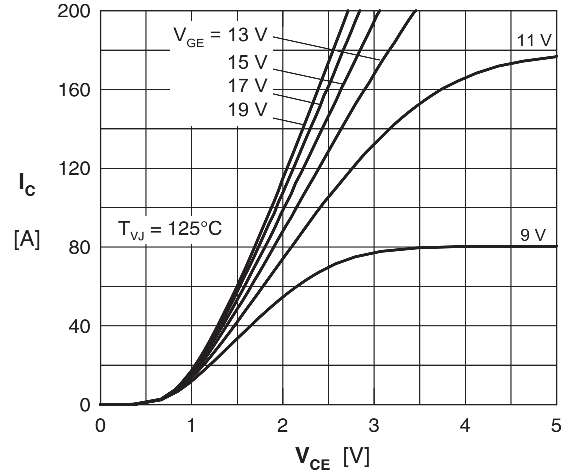

Fig. 2 output characteristics

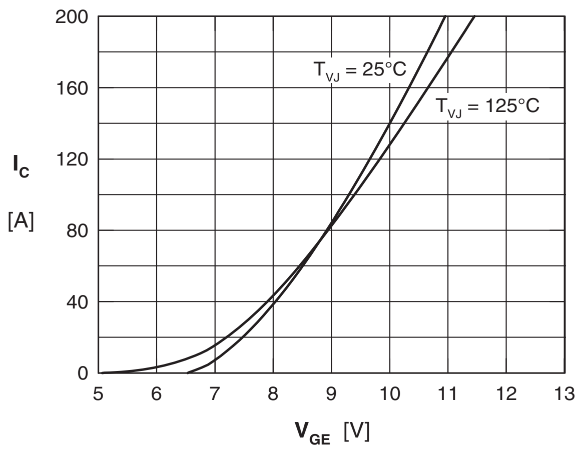

Fig. 3 Typ. transfer characteristics

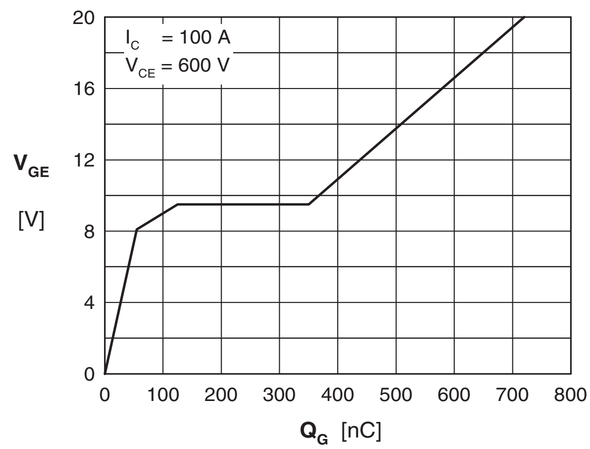

Fig. 4 Typ. turn-on gate charge

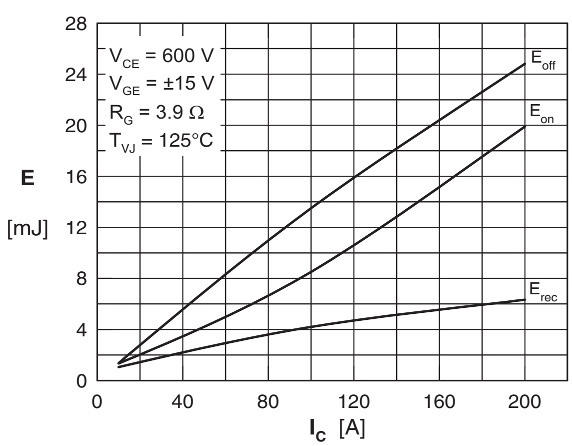

Fig. 5 Typ. switching energy vs. collector current

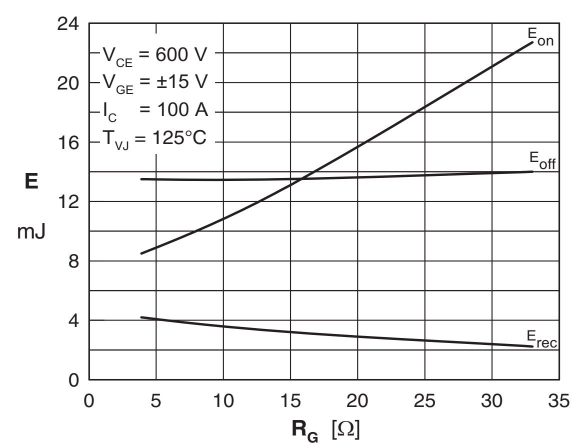

Fig. 6 Typ. switching energy vs. gate resistance

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Inverter D1 - D6

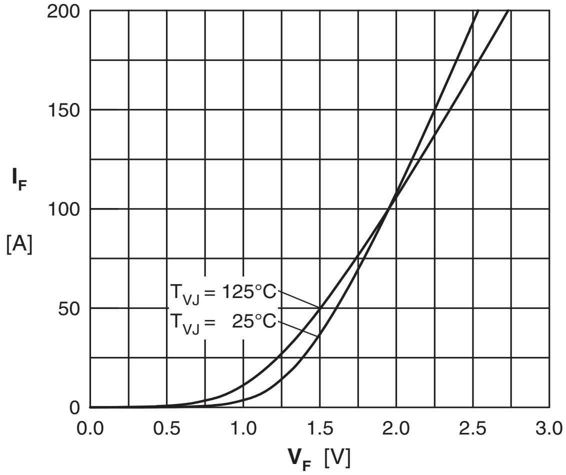

Fig. 7 Typ. Forward current versus V_F

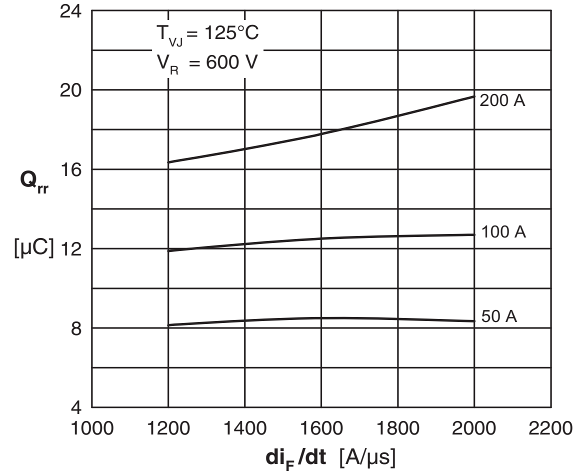

Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

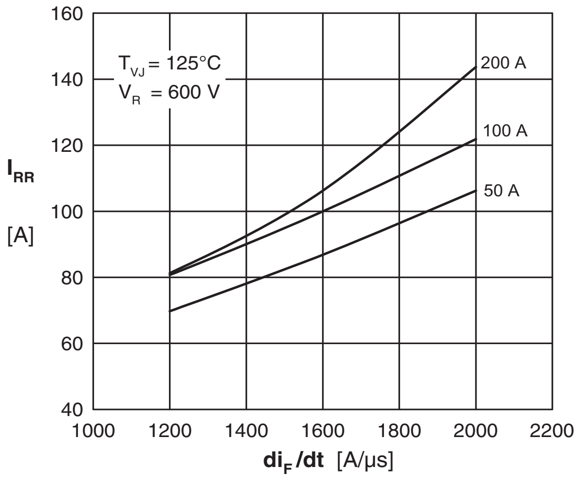

Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

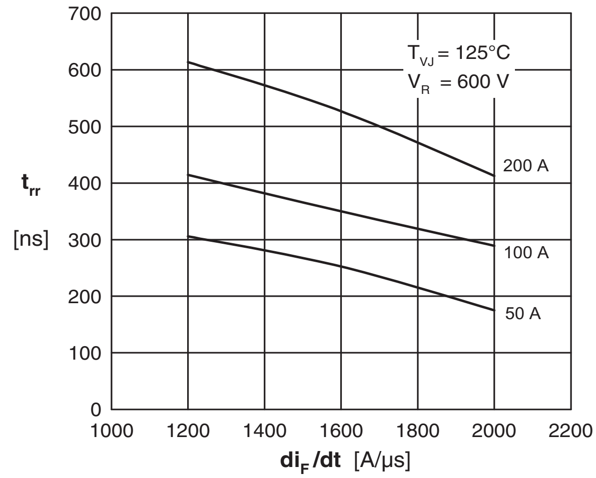

Fig. 10 Typ. recovery time t_{rr} versus di/dt

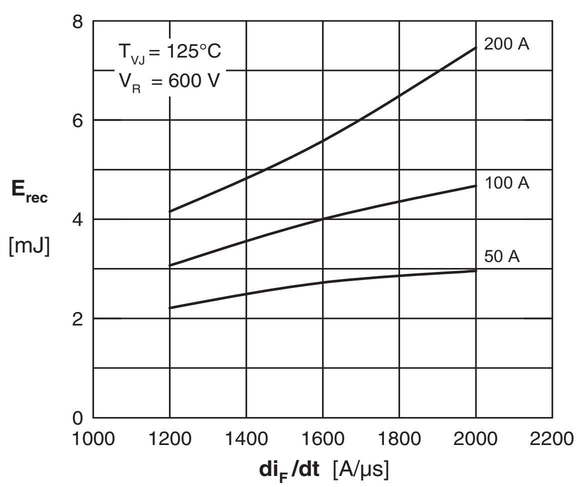

Fig. 11 Typ. recovery energy E_{rec} versus di/dt

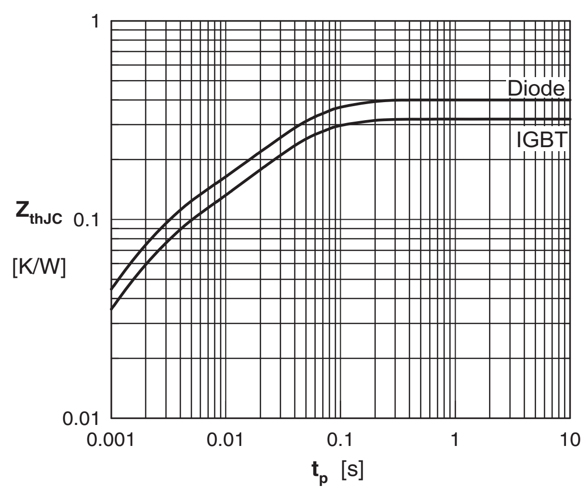

Fig. 12 Typ. transient thermal impedance

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NTC

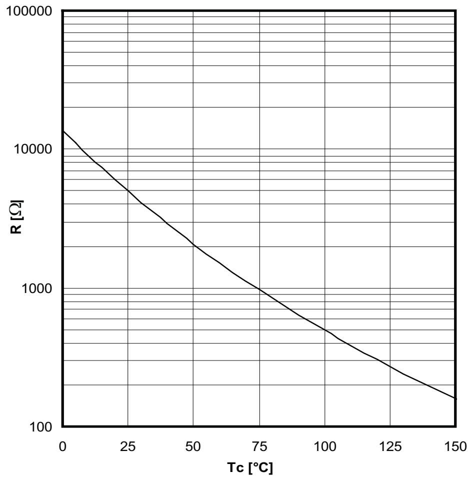

Fig. 13 Typ. NTC resistance vs. temperature